amount contains. A normal unit is ten times the amount of serum required to counteract ten lethal doses of the diphtheria toxin when injected into a guinea-pig weighing 250-350 g. Thus if the toxin is lethal in doses of $\frac{1}{10}$ c.cm. and $\frac{1}{100}$ c.cm. of the serum is required to antagonise 1 c.cm. (that is, 10 times $\frac{1}{10}$ c.cm.) of the toxin; $\frac{1}{10}$ c.cm. of serum contains 1 normal unit, or 10 c.cm. contains 100 normal units. A serum of this strength is useless for treating cases of diphtheria, and only the strongest serum ought to be used. Behring's No. 3 serum is stated to contain 1,500 normal units in the $7\frac{1}{2}$ c.cm., and even if not quite so strong as this, it is a good serum. Dr. Ruffer, the Director of the British Institute of Preventive Medicine, informs me that "since February, 1895, no serum has been sent out"—I quote his own words—"which did not contain 1,000 normal units in 10 c.cm." He adds that since December, 1895, the serum sent out by the Institute has contained 1,500 normal units in the 10 c.cm. This is very satisfactory. We are now giving at the hospital 40 c.cm. of serum in the first twenty-four hours to each patient, that is, at least 4,000 normal units.

ON AN UNPUBLISHED ENGLISH ANATOMICAL TREATISE OF THE FOURTEENTH CENTURY;

AND ITS RELATION TO THE "ANATOMY" OF THOMAS VICARY.[1]

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In the following remarks I venture to draw the attention of the Section to a curious document in medical history, which may be to a certain extent supplementary to the valuable and interesting historical address with which my friend Mr. Anderson has favoured us.

The MS. which I show you contains a treatise on surgery, not complete and perhaps never completed, but having prefixed to it a short treatise on the anatomy of the human body. The work is by an English surgeon whose personality is clearly displayed, though his name is not given, and it is in the English language. The date of composition is given in the text itself as the year of our Lord 1392; and I may say briefly that, even were the date wanting, the substance and the language of the work would assign it unmistakably to the latter end of the fourteenth century. Of language I am no judge, but I find that the phraseology and to a large extent the spelling precisely agree with a MS. translation of Lanfrank's *Surgery*, which has been printed by the Early English Text Society, and is assigned to the date 1390.

The handwriting of the MS. is, however, considerably more modern, perhaps a century later; but this point I leave to the judgment of experts.

Now, to begin with, this date alone gives our MS. considerable interest. A treatise on anatomy by an English author, written in the English language of the fourteenth century, is, so far as I know, unique. But I do not pretend to say that there is no similar treatise till the MS. treasures of the British Museum and other great libraries have been more thoroughly explored than they have been at present. The only documents comparable to it with which I am acquainted are the works of John Arderne, which were originally written in Latin, the English version being assigned by experts to a later period; the translations of Lanfrank's *Surgery*, published by the English Text Society; and some translations of the French surgeon Henry de Mondeville, which have not yet been published.

Let me pause for a moment to point out how important an epoch the fourteenth century was in the history of English science, as of English literature and theology. In literature and theology the verse of Chaucer and the prose of Wycliffe are sufficient examples, not to speak of other writers whose names are known to every scholar. In science we have the notable work of John Arderne, the first English surgeon, and in his own field not an unworthy contemporary of those great classics. It was an age of energy, of innovation of brilliant achievement, and promise yet more brilliant. How and why this brilliancy faded away in the fifteenth century, that flat and uneventful field of historians, would be a long tale to tell. Suffice it to say that first the ravages of the Black Death and succeeding pestilences, which fell with extraordinary severity on the clerical and learned class,[2] and then the Wars of the Roses brought the progress of science and medicine in England almost to a standstill. So that in the sixteenth century, when the revival of learning and the introduction of printing led men to take stock of their intellectual possessions, little more was done in practical medicine than to gather up the threads of the fourteenth century tradition, and combine them with some new elements supplied by the revival of ancient science and by contemporary research on the Continent. The works of Arderne, though they were still buried in manuscript, and only a small portion was printed in the reign of Elizabeth, long remained the standard authority in surgery, and this very treatise which I have here, had also, as I shall show you, an extraordinary resurrection in the middle of the sixteenth century.

Now, to return to our document itself. The MS. is a folio on paper, in double columns, of 190 leaves, including some blanks, written in a very fine and (happily for those who are no palæographers) a very legible black letter. The treatise on Anatomy and Surgery occupies 124 leaves, and there are some other documents in the volume, of which I need not speak now.

I will read the preface to the work:

The Holy Trinity that is head and well of cunning, giver and graunter of grace to all tho that by her power trevailen truly about science and cunning, that is help and edification to his people, graunte you grace that this compilation shall have so for the usen and disposen the fruyt of medicyns and of worchynge in it conteyned that it turne specialy to the worschipe of God and profit of the peple. The which compilacion of sirurgie I have compiled and drawen aftir the discreet autoritie of my moost worschipful maistris and predecessouris of the same science. And specialy aftir the noble counseil of my worthi maistir Lanfranke, puttynge therto worchynge that I have assaied and proved in my tyme and other expert medicyns y gaderid of dyvers worcheris that they also have assaied and proved, y compilid and endid in the year of our Lord MCCCLXXXXII.

Wherefor I prie and counseile you that usen the worchinge in this doctrine, contynue that ye ben gracious and helpinge to the pore for Goddis sake, and to the riche for a competent salarie, and also that ye seien for his soule that compilide this tretis, and for all tho that helpide therto and for alle cristen a paternoster and an ave marie. And though it be so that I y sum tyme addynge and sum tyme with drawynge have transposid the ordynance of thes myn aforseid maistreis, and so by cause of ignorance have fallen othir while in to errour, I biseche you tendirly that it schal reden or heren or undirstonden that ye have me excusid, and that ye adden and fulfillen benygly the defautis in it conteyned after the decre of the worschipful Galen in the ij De morbo et accidente, and in the v and in the last chapitre leggynge this text. Olde mennys sawis schulen be declarid frendly of here feloweris, and if ther failen ony thing, it schal ben bi hem benygly fulfilled.

The first part includes the anatomy. It is divided into three sections called "Distinctions." The classification is as follows:

The First Distinction hath seven chapters; treats of the definition of anatomy, and of embrion, and of all his consimilar members: 1, Definition of Anatomy; 2, Anatomy of Embrion; 3, Anatomy of Marrows, Bones, and Gristles; 4, Anatomy of Ligaments, Sinews, and Cords; 5, Anatomy of Arteries, Veins, and Gristles; 6, Anatomy of Brawnes, Lacertes, and Villis; 7, Anatomy of Fatness, Skin, Hair, and Nails.

The Second Distinction hath fifteen chapters; treats of a man and all divers members: 1, Anatomy of the Head; 2, Anatomy of the Forehead; 3, Anatomy of the Eye; 4, Anatomy of the Nose; 5, Anatomy of the Mouth; 6, Anatomy of the Neck; 7, Anatomy of the Shoulder; 8, Anatomy of the Arm; 9, Anatomy of the Breast; 10, Anatomy of the Wombe; 11, Anatomy of the Matrice; 12, Anatomy of the Haunches; 13, Anatomy of Manne's Privy Members; 14, Anatomy of the Thighs, Legs, and Feet; 15, Recapitulation of all the Bones in a Man's Body.

The Third Distinction treats of the four complexions, with the signs of the Zodiac, and has ten chapters.

The first "distinction" defines anatomy according to Henry de Amanda Villa (Henry de Mondeville) thus: "Anatomy is rightful division and knowing of a man's body, and of his singular parts and members, the which body is the subject or the matter in all science of medicine and of sirurgery."

The etymology is curious: Anothamie "is said of this word of Grew" *ana*, that is to say, as "rightful," and "this word of Grew" *thomos*, that is to say, "division" and properly of a man's body.

The account of the embryo is most curious. It explains the supposed origin of different tissues and parts from the male and the female seed and from the menstrual blood. This is necessary for understanding the terms used afterwards. It is based on, or taken from, Mondeville.

[1] Read in the Section of Anatomy and Histology at the Annual Meeting of the British Medical Association, held in London, July-August, 1895.

[2] Gasquet's *History of the Great Pestilence*.

After this interesting preface we will now consider the general scope and contents of our treatise. Speaking first of the anatomy, with which we are principally concerned, it is a compilation, as stated, from several authors, but chiefly from two—namely, Lanfrank of Milan, who is mentioned in the preface, and Henry de Mondeville, who is very frequently quoted, and to whom the writer is, I think, even more indebted than to Lanfrank. Of these writers and their relation to each other a word must be said.

Lanfranchi, or Lanfrank, of Milan, was born about the middle probably of the thirteenth century and died in Paris about 1306. He was one of the great school of Italian surgeons who revived surgery in the Middle Ages, being a pupil of William de Saliceto, but himself left Italy and settled in Paris, where he taught surgery for many years. He was regarded as the greatest European surgeon of the Middle Ages before the advent of Guy de Chauliac. His chief work, the *Chirurgia Magna*, was a very popular textbook, both before and for some time after the invention of printing. It was translated into French and German, and these versions were afterwards printed. An English version, which existed in manuscript, has been published by the Early English Text Society for its linguistic interest, but it was never printed for the use of surgeons in the days when it might have been valuable. The writer of this manuscript could not possibly have been a personal pupil of Lanfrank, since he was alive in 1392, when Lanfrank had been dead some eighty years, but he has quoted from him, both with and without acknowledgment, very largely. The general plan of the work is quite different from that of Lanfrank, who only prefixes a section on anatomy to the chapters of his work on surgery, and does not make the anatomy a separate treatise.

I pass then to his second authority, Henry de Mondeville, or Henry de Amanda Villa as he is always quoted. Mondeville was a French surgeon whose name, after centuries of neglect, has lately been brought into prominence. The date of his birth is uncertain, but in 1301 he was surgeon to Philippe le Bel, King of France, and afterwards held the same office in the court of his successor, Philippe le Hutin. He studied at Montpelier and Paris, and afterwards visited Italy, where he was a pupil of the celebrated Theodoric, a great Italian surgeon, who introduced new methods of healing wounds. He taught surgery at Montpelier, where he was a contemporary of Bernard of Gordon, and afterwards at Paris. It is recorded that he was sent by the King Philippe *apud Angliam*, perhaps with an embassy, in the year 1312; others think it means to some of the possessions of the English kings on French soil—that is, to Arras. He died about 1320, being then probably 60 years of age. He is referred to by many subsequent writers, more especially by Guy de Chauliac; also once by our English surgeon, John Arderne.

One remarkable feature of the Anatomical Lectures of Mondeville is that they were illustrated, as Guy de Chauliac tells us, by large pictures or diagrams. None of these seem to have been found. Our English writer could not, evidently, have been a personal pupil of Mondeville, but he quotes him very largely, and the general plan of his treatise on anatomy agrees remarkably with that of the French professor.

The fate of Mondeville's writings is curious. Not ten years ago, in 1886, Haeser, in the *Biographisches Lexicon der Aerzte*, speaks of him as having written a treatise on surgery, which is no longer in existence. Since then, however, his Treatise on Anatomy has been published in Latin by Dr. Pagel, of Berlin, and the complete work on anatomy and surgery in Latin by Dr. Pagel, and in French by M. Nicaise (1893). Several manuscripts of his works have been discovered: one in the British Museum, in Dutch. The very manuscript volume which I now show you contains a fragment of a translation of his surgery into English, quite distinct from the work of the English surgeon. I have little doubt that other fragments, at least, exist in the English libraries, but I have been unable to search for them systematically. For our present purpose the important fact, then, is that the general arrangement of our writer agrees precisely with that of Mondeville on anatomy, as will be apparent from the following summary:

Chapters of Mondeville's Treatise on Anatomy.

1. Anatomy of the homogeneous (consimiles) parts.
2. Upper parts of the head.
3. The face and all its parts.
4. The neck and its parts.
5. The shoulders.
6. The arms.
7. The chest and all the parts contained in it.
8. The abdomen and organs of nutrition.
9. The uterus, kidneys, bladder, etc.
10. The haunches, pubes, and axillæ.
11. The generative organs, the perineum, and anus.
12. The thighs and lower limbs.

This arrangement is evidently unusual, and therefore the agreement of our author is very significant. Moreover, there are a number of passages in which our MS. agrees verbally with the descriptions of Mondeville. The quotations from Galen, Aristotle, and other authors are in many cases identical.

We must conclude, then, that the debt of our author to Mondeville is very great, greater even than is accounted for by the numerous passages in which he quotes him by name. Among other passages I have mentioned our author's curious etymology of Anatomy, which is identical with that of Mondeville. His quotation in the paper from the (apocryphal) work of Galen (De Morbo et Accidente) is also given by Mondeville. His account of the necessary qualifications and means of a surgeon, though partly that of Lanfrank, is partly taken from Mondeville.

Finally, we may say that our MS. is founded almost entirely on the works of Lanfrank and Mondeville. There is no allusion to Guy de Chauliac or any other contemporary, though other older writers are quoted.

The materials borrowed from Lanfrank and Mondeville were not original in those writers. They formed part of the common stock of anatomical tradition which was drawn upon in these ages from Arabian sources, especially from Avicenna, but which the Arabs derived from the Greeks, chiefly from Galen, partly from Aristotle. In the process of handing down nothing of importance was added. In neither of the writers here spoken of is there any reference to the contemporary Mondini, or Mundinus, who lived from about 1275 to 1327, and is usually regarded as the restorer of anatomy in mediæval Europe.

I must now speak of these features of our manuscript which show that the writer, though a compiler, had a distinct individuality. It appears that he practised in London. Speaking of the inefficacy of operation on cancer of the breast or other parts, he says: "And furthermore to speak of this sikenes in woman's pappes, there was a worschipful riche woman in London in my tyme, the whiche had such a canker in her pappe, to whom weren clepid the most discrete worcheris of the Cyte, both of fisik and surgerie, among whom I was present, and worching in the same cause.....But I seie surely evermore the malice encreside from day to day, and for al that we myghten do the syknesse was so fervent that it profitid ful litil to the patient, so that not a-genstondynge al our craft and kunnynge at the laste it is woundid and so the woman diede withynne short tyme aftir."

In another place he refers to a method of extracting arrow heads from a wound which was oftentimes proved of a knight yclepid Sir Richard Baskerville. The method was this: "First it is necessarie that you and also the patient to be clene shryven, and thenne seie three Paternoster and three Ave in worschipe of the Trinite, and either seie 'In nomine patris, etc., adjuro te per Deum vivum et per agios et per askiros [?] ut exeas inde,' and thenne putte therto thi two medicynable fyngers unto thei touch that yren and it schal lightly come out, ffor this medicyne hath oftentymes be proved of a knyght, yclepid Sir Richard Baskerville."

Speaking of the number of bones in the skull, which was a disputed question, he says: "But though it so be that we have tretid in this partie of these vi. bonys in the heed that ben necessarie to the dosinge and difference of the brayn. Nethelless we afferme not that ther beth siche vi. bonys in ech mannys heed ffor truly I foond in the charnel of Seynt Marie spetil at London a scolle bone that was al oon hool boon lik a basenett, outtaken oonliche the ij. small petrouse bonys and the nether chekebon," etc.

We see, then, that the author was a surgeon practising in London, and that he had sufficient independence of spirit to

examine the skull for himself and see how it agreed with the descriptions of authors. From another passage it seems probable that he had been in France, but this must not be taken as strictly proved.

One part of his anatomical treatise is peculiar to himself, and not to be found in any similar work which I have seen, namely, an account of the four complexions or temperaments: sangueyn, coler, fleume and melancolie, and their connection with the signs of the zodiac, the four elements, the course of the planets, and so forth. This part begins in the most sublime manner with a description of the eleven heavens and their spheres, the nine orders of angels, etc.

We conclude that the author was sufficiently well read in the science of his time, but there is no clear evidence that he was learned in the ancient authors, since his quotations may possibly have been second hand.

Having spoken of the originals or sources of this treatise, I now come to the most curious point of all—namely, its ultimate fate. At last, having copied others, our author was copied himself, and, indeed, more than copied, for could he have lived two hundred years he would have seen the substance of his anatomical work abridged, and little added to, appearing under another name as a contemporary work. In reading the MS. I was much struck with its resemblance to something I had read, and on comparison found that a considerable portion of it was reproduced word for word in the little anatomical work called *Vicary's Anatomy*, printed in 1577 as:

"A profitable Treatise of the Anatomy of Man's Body."

A later edition is called:

"The Englishman's Treasure with the True Anatomy of Man's Body. Compyled by that excellent Chirurgeon, Mr. Thomas Vicary, Esquire, Serjaunt Chirurgeon to King Henry the Eyght, to King Edward the VI, to Queen Mary, and to our most gracious soveraigne lady Queen Elizabeth, and also Chief Chirurgeon of St. Bartholomew's Hospital, etc. (1586)."

On close inspection it appears that by far the greater part of Vicary's work came from our fourteenth century author; that the order of subjects (peculiar to our author and Mondeville) is the same with two exceptions, and that the resemblance between many parts is so great that it could not be accounted for by the two authors having copied from the same authorities, but implies without doubt that one of them copied from the other. If this be the case, Vicary's work is not as stated, and, as one would naturally suppose, compiled from authorities who are not named, but must have been an actual transcript of this work of the fourteenth century surgeon. This conclusion is not only supported by certain coincidences which I will show presently, but is confirmed by a general consideration of the scope of Vicary's work.

Of Vicary himself I need not speak, as much has been written about him. He was the great court surgeon of his day, and closely connected with St. Bartholomew's Hospital, though whether he was actually surgeon to the hospital has been doubted by Sir James Paget and Dr. Norman Moore.

VICARY'S ANATOMY.

At first sight, to those not specially acquainted with anatomical literature, this will appear as a compilation which, though very meagre, might represent the state of anatomical science at the time when it was written. But a little consideration shows that this is by no means true; it represents the anatomy of a far antecedent date.

The earliest edition of Vicary actually known is that of 1577, reprinted by Dr. Furnivall for the Early English Text Society in 1888; but it is thought there was an edition published in 1548. No copy of this has ever been found, but Dr. Furnivall speaks of a MS. transcript which he believes to have been made from this edition. Vicary died in 1562. Supposing it to have been written in 1548, at this time the *Anatomy* of Mondini had appeared in several editions. The great work of Vesalius had been published in 1543, and two years later Thomas Geminus had brought out in London reproductions of Vesalius's plates, with a Latin description. Geminus was a colleague of Vicary as surgeon to Edward VI, and the latter could not possibly have been ignorant of this publication. Nevertheless, of these recent publications, and of all the additions made to anatomy in the fifteenth century, not a word appears in Vicary's text. The anatomy of Vicary is absolutely that of the fourteenth century, of Lanfrank, of Mondeville, of Guy de Chauliac, of our anonymous author. It is hardly conceivable that anyone seeking to compile a work on anatomy in 1548 could have deliberately shut his eyes to all the progress that had been made for two centuries. Possibly Vicary knew no Latin, but Geminus's plates appeared with an English version of the text very shortly after. Moreover, his contemporaries Halle (*Surgery* 1565) and Bannister (*Anatomy*, 1578), in works published immediately after, profited by the teaching of Vesalius and Columbus.

The supposition that Vicary's book was a transcript from the fourteenth century author, and not original, even as a compilation, is strengthened when we find the extraordinary verbal agreement with our author. I will begin with the description of bone, first giving the text of the MS.:

A boon is a consimile membre symple and purely spermatik and hardest of of alle membris, and coold of complexion and drie, insensible and inflexible and hath divers formes in mannes body, for he hath divers helpingis. The cause whi ther ben manye bonys in mannys body is this, ffor sumtyme it is nede to meve oon lyme withouten anothir, and that were impossible if the were in al the bodi but oon hool boon. Another cause is this, ffor summe defenden the principal lymes from harme as the brayne panne and the brayne, and summe ben foundementis of divers parties of the body, as the bonys of the rigge and of the leggis, and other siche and summe fulfillen the holownes. And some joyntis as of the handis and of the feet, and also that the roundnes of oon boon mygte entre into the hollownesse of that other and netheles he schulde not lacke his mevynge, as the schuldre bonys and the hipe bonys of whiche that I schal speke of in her anothamye.

Gristile is a membre consimile symple purely spermatik, next in hardness to the boon, and is of complexion cold and drie and insensible, and also summe beth insensible and summe not. A gristil was made of vj utilites, of which the firste is this, that the contynuation of the hard boon with the neische lymes ne schulde not be without a mene. The ij, that in the tyme of concussion or oppression the neische lymes schulden not be hurt of the hard. The iij, that the extremytes of bonys and joyntis that beth gristely mowen be esily folden and frotid togidere without hurtynge. The fourth, for it is necessarie in some mene placis to putte a gristil, as in the throte bolle (bowel, Vicary), that he myzte sowne lyk to a symbal. The v, for it ys nedeful summe membris to ben holden up with a gristle, as the lidde of the yze. The vj, for it is nede summe tymes to have a susteynynge and a drawynge abrood that myzte not be doon with a boon, but with a gristle, as the nose and the ere and other siche.

Ligament is a membre consimile symple and spermatik, next in hardnes to the gristle, of complexion cold and drie, and he is flexible and insensible, and he byndith the bonys togidere, and he hath thre helpingis, of the which the first is this, that with him the bonys were knytted togideris, for it is reasonable that thei be knytte togideris, that manye bonys myzten make oon body, and netheles ech membre mizte meven bi him silf, and therefor the ligament was bowable and insensible, for if he hadde be sensible he myzte not have susteyned the travaile of the mevynge of the joynctis, and if that he hadde ben inflexible, as a boon of whom he cam of i oon lyme ne myzte not have meved with anothir. The secunde helpinge is this that he be joyned with senewis, for to maken cordis and brawnys. The iij helpinge is this that he schulde be a restynge place to summe senewis. The iiij helpinge is this that bi him the membris that ben withynne the body schulden be hangid, as the matrice and the kideneies.

Compare with this Vicary's description:

I shall begin at the bone, because it is the foundation and the hardest member of all the body. The bone is a consimile member, simple and spermaticke, and cold and drye of complexion, insensible and inflexible; and hath divers formes in man's body, for the diversitie of helpings. The cause why there be many bones in man's body is this: Sometimes it is needeful that one member or one lymme should move without another. Another cause is that some defende the principal members as doth the bone of the brest, and of the head; and some to be the foundation of divers parts of the body, as the bones of the ridge, and of the legges, and some to fulfill the hollow places, as in the handes and feete, etc.

The grystle is a member simple and spermaticke, next in hardnes to the bone, and is of complexion cold and dry and insensible. The grystle was ordeyned for sixe causes or profites that I find in it. The first is, that the continued moving of the hard bone might not be done in a juncture, but that the grystle should be a meane betweene the lygament and him.....The fourth is for that it is necessary in some meane places to put a grystle, *as in the throat bowel for the sound*.....The sixth is that some limmes have a susteyning and a drawing abroade, as in the nose and the eares, etc.

The lygament is a member consimile, simple and spermaticke, next in hardness to the grystle and of complexion cold and dry, and is flexible and insensible and bindeth the bones together. The cause why he is flexible and insensible is this: If it had been sensible he might not have suffred the labour and moving of the joyntes:.....

I need not complete the paragraphs, since Vicary's text agrees almost precisely with the MS., though somewhat abridged, and I think it is clear that the shorter passage was borrowed from the longer.

There is another quaint passage about the bowels:

In the thridde doctrine of this chapitre it schal ben ytretid of the guttis or bowels and of her variaunce after dyvers opynyons. Henri de Amanda Villa seith, that the seyinge of the comoun peple is, that there beth in a man vj guttis. And as Galien seyth ivto libro de juvament capo. 20 that the comoun cause of her creation was that the draggis of the mete schuld be put out by him. But here it is to be understonden that whatsoever men sein tretynge of the anothamye of the guttis,

sciynge that ther beth vj, here entention is or schal be that there beth vj portions of a gutte and that in every man or beest, having his begynnynge at the nethere mouth of the stomak, and so contynueth forthe aud is endid in the bredde of the foundement or the ers. Netheless he hath divers partis and formes aftir that he hath in the body divers operations and helpingis, and therfore it is that divers portions of him haveth divers names. But hereupon the philosophore seith primo de historiis animalium that the lower wombe of a man, that ys to seie the guttis, is lyk unto the wombe of a swyne and rizt as the wey of the mete, and as the stomak hath tweye tuniclis; in the same maner han alle the guttis tweye tuniclis. The firste gutt is called duodenum ffor it is twelve ynchis in lenkthe, for he closith the nethere part of the stomak, and this gutt is evene for the draggis schulden the liztloker and the sunere discenden fro the nethe mouth of the stomak. The secunde gutt is called jejunum, the which is conteyned with duodenum and he is clepid jejunum for he is evermore empty bothe in the quike and in the deed, and that for tweye causis. The firste for to him discendith color fro cista fellis and bitith him sore and drivith out of him dritt or the draggis clenly. The secunde for manye misraike veynes beth rotid in him the whiche drawen awey fro him al foul filthe and corruption. The thridde gutt is called ylion, and this is the laste of the smale guttis.

Vicary writes as follows:

Galen sayeth that the Guttes were ordeined in the first creation to convey the drosse of the meate and drinke, and to cleanse the bodie of their superfluities. And here it is to be noted that there be six portions of one whole gutte, which both in man and beast beginneth at the nether mouth of the stomack, and so continueth forth to the end of the fundament.....And hereupon the Philosophers saye that the lower wombe of a man is like unto the wombe of a swine.....The seconde portion of the guttes is called jejunium, for he is evermore emptie, *for to him lyeth evermore the chest of the Gal beating him sore*, and draweth foorth of him al the drosse, and cleanseth him cleane.

Here the curious phrase, "beating him sore," makes absolute nonsense in Vicary, though it was never corrected in any of the editions. It was evidently a misreading of "bitith him sore" in the MS. This word "bite" is curious. It must refer to the supposed irritant properties of the bile. Lanfrank and Mondeville have similar, not identical, passages, which could not have been the original of Vicary.

I will quote one more instance where an unintelligible passage in Vicary becomes clear when compared with its original. Vicary has, speaking of the neck and throat: "Furthermore, cana pulmonis via trachea arteria—all these be one thing; that is to say, the throte boll." This has puzzled Dr. Furnivall, as it would puzzle anyone who paid sufficient attention to the work, and he suggests in explanation reading "cava pulmonis via." This is not a recognised expression, however. In the MS. I read: "Canna pulmonis, via aeris, trachea arteria ben al oon thing, and ben as much to say the throte bolle." The change of phrase is notable. The phrase "canna pulmonis, reed going to the lung," is used also by Mondeville, who has the whole sentence.

The following seems to refer to the ligamentum nuchæ:

The seconde principal part of the neck beth ij services, the which both contain longitudinal flesh ligging in the middle up the two sides of these aforesaid spondils from the basilar bone to the seventh spondil, and also on the sides of all the spondils of the riggebone, down to the nethermost side.

And this manner of flesh is called in sum countrie in English vix vax, and of summe young children it is called yolowe heer; and these long services were made for this cause, that when the sinewis ben weary of her mevynge and travail mowen raste upon it as upon a quilte or upon a materas.

Vicary.—The first is pix wex or servisis, and it is called of children gold hair or yellow hair, the which are certain longitudinals; and they are ordered for this cause, that when the servisis ben wery of overmuch moving and travail they may rest upon them as upon a bed.

It will be asked, Is there nothing in Vicary which is not in the older writer? There are a few short passages:

1. The curious names of the teeth, which are not in the MS or in Mondeville; whence they come I do not know.

2. A rather long account of the bones of the foot is not in MS.

3. The curious name "gwidege" for the jugular veins, explained by Dr. Furnivall as coming from the Arabic, is not in MS.

4. A few references to Guido=Guy de Chauliac, who must have been about a contemporary of our author, and is never mentioned by him.

Vicary omits a great deal and abbreviates a great deal of the MS. His treatise cannot be more than half as long. The quotations from ancient writers are given very loosely and inaccurately by Vicary, but are the same as given fully in the MS. Most, however, are given by Mondeville.

I will not weary you with more quotations. These, I think, show either one of two things: (1) Vicary was in possession of a copy of this treatise, of which he made an abridgment, using the same words, sometimes not understanding them, and brought it out as his own. One does not like to think of Vicary as an actual literary impostor, and there is, perhaps, another supposition. (2) Possibly Vicary did not profess to be the author. The only absolutely known printed edition was brought out fifteen years after his death by his colleagues at St. Bartholomew's Hospital, and they may have found a manuscript tract which they regarded as Vicary's, though he had never laid claim to it, and published it as his. In any case the real author or compiler was our anonymous friend of the fourteenth century, about whom I wish I knew more. His book is, I think, interesting as an example of the medical language of the time. Vicary's book is not really an example of the language of his time, his nomenclature being quite out of date, though the spelling and diction are modernised.

ON CERTAIN GRAVE DEFECTS IN THE SYSTEM OF ARTIFICIAL RESPIRATION

AS ORDINARILY APPLIED TO THE TREATMENT OF CHLOROFORM COLLAPSE AND ASPHYXIA.

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A SOMEWHAT large experience of the results of the application of unassisted artificial respiration to the treatment of animals whose respirations and heart beats have ceased under the influence of an overdose of an anæsthetic has convinced me that this method of treatment gives very unsatisfactory results. Experience upon animals is, in this respect, in perfect accord with clinical experience upon man. I therefore wish to direct attention to a method of treating such cases of chloroform collapse, which has proved itself extremely efficacious in the case of the ordinary laboratory animals. The method consists in opening a major artery before proceeding to apply artificial respiration. At least nine out of every ten dogs may be resuscitated from a condition of apparent death from chloroform by the application of this method of combined arterial bleeding and artificial respiration. On reflection it becomes intelligible why this should be so. The essentials of a successful treatment of cases of chloroform collapse are evidently the following: First, we must have a proper ventilation of the chloroform-charged venous blood in the lungs; and, secondly, we must have a rapid distribution of this duly ventilated blood through the arterial system. Now, unassisted artificial respiration undoubtedly makes provision for the ventilation of the blood in the lungs. It, however, makes no effective provision for the immediate feeding of this aërated blood into the left heart and the arterial system. The method, in fact, fails to take into account two important facts. It fails to take into account the fact that the passage of the duly aërated blood into the arterial system is blocked by the venous and chloroform-overcharged blood, which passed through the pulmonary capillaries before artificial respiration was resorted to. And it further fails to take into account the other equally important fact that no blood (or at most only a minimal quantity of blood) can be expelled from the left heart into the arterial system until sufficient pressure has been got up in the ventricle to distend the walls of the collapsed arteries to something approaching their original size. When, therefore, we set to work with the ordinary methods of artificial respiration to re-establish the circulation we place ourselves under very distinct physiological disadvantages. We not only undertake to drive on in front of the aërated blood a considerable volume of vitiated blood, but we set ourselves to overcome a very considerable mechanical resistance in the arteries. By opening an artery, we immediately place ourselves under infinitely more advantageous conditions. In the first place, we provide an outlet through which we can